REMARKS

STATUS OF CLAIMS

Claims 1-14 have been pending.

Claims 6, 9 and 10 are rejected under 35 USC 112, second paragraph, for indefiniteness as indicated in page 2 of the Office Action.

Claims 1, 2, 5-11 and 14 are rejected under 35 USC 103(a) as being unpatentable over Fujita (US Patent No. 5,812,685) in view of Davis (US Patent No. 4,503,553).

Claims 3, 4, 12 and 13 are rejected under 35 USC 103(a) as being unpatentable over Fujita in view of Davis and further in view of well known prior art (MPEP 2144.03).

Claims 1, 6, 9, and 11 are amended.

Claims 2-4 and 12-13 are cancelled without disclaimer or prejudice.

New claims 15 and 16 are added.

Thus, claims 1, 5-11 and 14-16 remain pending for reconsideration, which is respectfully requested.

No new matter has been added in this Amendment. The foregoing rejections are hereby traversed.

35 USC 112, SECOND PARAGRAPH, REJECTION

Claims 6, 9 and 10 are rejected under 35 USC 112, second paragraph, for indefiniteness as indicated in page 2 of the Office Action. Independent claim 6 is amended taking into consideration the Examiner's comments. Support for independent claim 6 can be found, for example, in page 14, last paragraph, of the present Application. Withdrawal of the indefiniteness rejection is respectfully requested.

35 USC 103 REJECTION

Claims 1, 2, 5-11 and 14 are rejected under 35 USC 103(a) as being unpatentable over Fujita (US Patent No. 5,812,685) in view of Davis (US Patent No. 4,503,553).

Dependent claims 3, 4, 12 and 13 are rejected under 35 USC 103(a) as being unpatentable over Fujita in view of Davis and further in view of well known prior art (MPEP 2144.03).

Independent claims 1, 6 and 11 are amended incorporating the patentably distinguishing features of dependent claims 2, 3 and 4 (with respect to independent claim 1). Therefore, the present claimed invention as recited in amended independent claims 1, 6 and 11 is patentably distinguishing over Fujita and Davis, and the Examiner's well known allegation in rejecting dependent claims 3 and 4, is traversed, as follows:

(1) The present loudspeaker system has a regular dodecahedron (e.g., independent claims 1 and 11) or spherical (e.g., independent claim 6) body and twelve full range speakers all having the same frequency characteristics. The 12 speakers are "disposed on outer peripheral surfaces of the loudspeaker body in a manner that axial lines of any adjacent two speakers intersect each other at a predetermined same angle." Accordingly, relative positional relationships between any adjacent two speakers are substantially the same manner. And accordingly as shown in FIGS. 7 and 8 of the present Application, flatness of the sound pressure on the axial line P can be maintained (see pages 9 and 10 of the present Application, and FIG. 3).

(2) In the present claimed invention, the twelve speakers are arranged either in a manner that said twelve speakers includes three sets of speaker groups connected in parallel to each other, and each speaker group includes four speakers connected in series, or in a manner that said twelve speakers includes four sets of speaker groups connected in series, and each speaker group includes three speakers connected in parallel to each other. The present claimed invention's speaker connections have a benefit of allowing handling all 12 speakers as if they behaved as one speaker, so that the flatness of the sound pressure all around the speaker system can be realized by using only one correction filter.

(3) The Examiner admits that Fujita and Davis do not specify the manner of the speaker connection. However, in page 9, item 5 of the Office Action, the Examiner in rejecting dependent claims 3 and 4 (now incorporated in independent claims) also alleges that connecting a group of resistance in series and in parallel can be achieved from the basic electrical laws. However, the Applicant respectfully disagrees and asserts that present claimed invention's idea of flattening the sound pressure of specially connected 12 speakers using only one correction

filter cannot be easily conceived. In other words, for example, the independent claim 1 expressly recites, "*one correction filter*" connected to 12 speakers "*arranged either in a manner that said twelve speakers including three sets of speaker groups connected in parallel to each other, each speaker group including four speakers connected in series, or in a manner that said twelve speakers including four sets of speaker groups connected in series, each speaker group including three speakers connected in parallel to each other*" to "*flatten the sound pressures at a position existing on a line extending straight from a center of the ~~polyhedron~~dodecahedron toward an outside of the ~~polyhedron~~ dodecahedron via an apex position of the adjacent two speakers, wherein at the position an average attenuation in sound pressure versus the increasing sound frequencies from about 500Hz and greater is maximum without the correction filter,*" which is not well known in the art. The present claimed invention's speaker connections have a benefit of allowing handling all 12 speakers as if they behaved as one speaker, so that the flatness of the sound pressure all around the speaker system can be realized by using only one correction filter.

As shown in FIGS. 3 to 5 of the present Application, flatness of the sound pressures at a position S1 existing on a line extending straight from a center of the dodecahedron toward an outside of the dodecahedron via an apex position of the adjacent two speakers can be achieved by electrically adjusting the one correction filter. Accordingly, flatness of the sound pressure all around the speaker system of the present invention can be achieved according to the claimed configuration, which has a benefit of being economical.

In contrast to Fujita and Davis (either alone or as combined), the present claimed invention provides:

> *one correction filter* operatively connected to the speakers and *increasing sound pressures in relation to increasing sound frequencies to flatten the sound pressures at a position existing on a line extending straight from a center of the ~~polyhedron~~dodecahedron toward an outside of the ~~polyhedron~~dodecahedron via an apex position of the adjacent two speakers, wherein at the position an average attenuation in sound pressure versus the increasing sound frequencies from about 500Hz and greater is maximum without the correction filter* (e.g., amended independent claim 1, emphasis added).

More particularly, the present invention uses "*one correction filter*" connected to 12

speakers "*arranged either in a manner that said twelve speakers including three sets of speaker groups connected in parallel to each other, each speaker group including four speakers connected in series, or in a manner that said twelve speakers including four sets of speaker groups connected in series, each speaker group including three speakers connected in parallel to each other*" to "*flatten* the sound pressures at a position existing on a line extending straight from a center of the ~~polyhedron~~dodecahedron toward an outside of the ~~polyhedron~~dodecahedron via an apex position of the adjacent two speakers, wherein at the position an average attenuation in sound pressure versus the increasing sound frequencies from about 500Hz and greater is maximum without the correction filter" (amended independent claim 1).

Support for the claims can be found in the bridging paragraph of pages 7 and 8, and FIGS. 1, 3, 4, and 5 showing the inclination characteristics of curves P2 and P1 at an apex line point S1 when measuring increasing frequency versus sound pressure, in which the sound pressure attenuates (decreases) as the sound frequency increases. See also, FIGS. 7 and 9, and pages 8-13, of the present Application.

Furthermore, in page 11 of the Office Action, the Examiner asserts that "a motivation behind such a modification [i.e., the present claimed invention's speakers connection arrangement] would have been the improved tradeoffs between the simplicity of such a connection and the decrease in the amount of current passing through the speaker resistances and the overall amount required by the system." However, the Examiner's motivation does not coincide with the present claimed invention's use of "*one correction filter*" connected to 12 speakers "*arranged either in a manner that said twelve speakers including three sets of speaker groups connected in parallel to each other, each speaker group including four speakers connected in series, or in a manner that said twelve speakers including four sets of speaker groups connected in series, each speaker group including three speakers connected in parallel to each other*," which have a benefit of allowing handling all 12 speakers as if they behaved as one speaker, to "*flatten* the sound pressures at a position existing on a line extending straight from a center of the ~~polyhedron~~dodecahedron toward an outside of the ~~polyhedron~~dodecahedron via an apex position of the adjacent two speakers, wherein at the position an average attenuation in sound pressure versus the increasing sound frequencies from about 500Hz and greater is maximum without the correction filter" (amended

independent claim 1). Accordingly the Examiner's well known assertion is hereby traversed.

Furthermore regarding the Examiner's well known assertion, consistent with MPEP 2144.03.A, and in view of the forgoing remarks on the patentably distinguishing features of the present *claimed* invention, the Applicant respectfully requests documentary evidence of such alleged well known allegation in compliance with the USPTO's February 21, 2002 Memorandum on Relying on Facts Which are Not of Record as Common Knowledge or for Taking Official Notice (copy enclosed).

FUJITA

Fujita discloses in column 5, lines 34 to 42, "there may be mentioned regular dodecahedron .... In the present invention, however, the speaker enclosure is preferably a hollow about 32- or more-hedron ......" Therefore, according to these Fujita disclosure descriptions, Fujita uses 32-hedron, not a dodecahedron. Claim 1 of Fujita provides "32-hedron composed of 12 pentagonal flat surfaces and 20 hexagonal flat surfaces" (see also Fig. 1 of Fujita).

First, regarding independent claims 1 and 11 of the present invention, in Fujita relative positional relationship between any adjacent two speakers are not in the same manner, which differs from the present claimed invention's "a loudspeaker body having a regular dodecahedron shape; a pluralitytwelve full range of speakers, all having same frequency characteristics, disposed on outer peripheral surfaces of the loudspeaker body in a manner that axial lines of any adjacent two speakers intersect each other at a predetermined same angle," (e.g., amended independent claims 1 and 11).

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Second, regarding independent claims 1, 6 and 11 of the present invention, in Fujita, one problem to be solved is that flatness on the axis of any speaker cannot be ensured in relation to its adjacent speakers (column 6, lines 9-26). Therefore, Fujita uses a plurality of DSPs (digital signal processors 6) for Fujita's speaker system, that is, each speaker needs its own DSP correction filter 6 (FIG. 4, column 6, line 26 to column 7, line 39). Fujita does not disclose or suggest using only one analog correction filter for a set of 12 speakers, as recited in amended independent claims 1, 6 and 11. Cost to produce Fujita's speaker system can possibly be higher than the present claimed invention, because many DSP's are needed. Therefore, in contrast to Fujita (and Davis, either alone or combined), the present invention as recited in independent claims 1 and 6, using claim 1 as an example, provides:

> *the twelve speakers being arranged either in a manner that said twelve speakers including three sets of speaker groups connected in parallel to each other, each speaker group including four speakers connected in series, or in a manner that said twelve speakers including four sets of speaker groups connected in series, each speaker group including three speakers connected in parallel to each other,* and
>
> a*one correction filter* operatively connected to the speakers and *increasing sound pressures in relation to increasing sound frequencies* to *flatten the sound pressures* at a position existing on a line extending straight from a center of the ~~polyhedron~~ dodecahedron toward an outside of the ~~polyhedron~~dodecahedron via an apex position of the adjacent two speakers, wherein at the position an average attenuation in sound pressure versus the increasing sound frequencies from about 500Hz and greater is maximum without the correction filter (emphasis added).

Third, in contrast to Fujita (and Davis, either alone or combined), the present invention as recited in independent claim 11 provides, "*one correction filter* connected to the speakers and *setting a correction value according to an attenuation factor based upon the predetermined angle* to *flatten sound pressures* in relation to increasing sound frequencies at a position existing on a line extending straight from a center of the ~~polyhedron~~dodecahedron toward an outside of the ~~polyhedron~~dodecahedron via an apex position of the adjacent two speakers, wherein at the position an average attenuation in sound pressure versus the increasing sound frequencies from about 500Hz and greater is maximum without the correction filter" (emphasis added).

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DAVIS

Davis uses woofers and tweeters (see column 7, line 54 to column 9, line 11), which are not a kind of full range speaker all having the same frequency characteristics, and therefore Davis differs from the present claimed invention's, "a plurality *twelve full range* of *speakers, all having same frequency characteristics,* disposed on outer peripheral surfaces of the loudspeaker body in a manner that axial lines of any adjacent two speakers intersect each other at a predetermined same angle" (e.g., amended independent claim 1, emphasis added).

Davis uses a pyramid type speaker body which is not a dodecahedron or spherical shape. Davis achieves flatness around its speaker system only in the horizontal direction, not in all around direction of the speaker body (not omni directional), which differs from the present claimed invention's, "*one correction filter* operatively connected to the speakers and *increasing sound pressures in relation to increasing sound frequencies* to flatten the sound pressures at a position existing on a line extending straight from a center of the polyhedron dodecahedron toward an outside of the polyhedron dodecahedron via an apex position of the adjacent two speakers, wherein at the position an average attenuation in sound pressure versus the increasing sound frequencies from about 500Hz and greater is maximum without the correction filter" (e.g., amended independent claim 1, emphasis added).

In Davis, each speaker has its own correction filter (see FIGS. 15A to 15C), causing high cost of the system, which differs from the present claimed invention's "*one correction filter ... connected to the speakers.*"

Therefore, Davis does not provide any suggestion or motivation to be combined with Fujita and/or does not provide any suggestion or motivation to modify Fujita to achieve the present claimed invention as recited in amended independent claims 1, 6 and 11. And even if one combined Fujita and Davis, the combined speaker system could not conceive the present claimed invention, which uses specific shape of the body and arrangement manner of the speakers as well as one correction filter for a set of 12 speakers, to flatten the sound pressures at a position existing on a line extending straight from a center of the dodecahedron toward an outside of the dodecahedron via an apex position of the adjacent two speakers, wherein at the position an average attenuation in sound pressure versus the increasing sound frequencies from about 500Hz and greater is maximum without the correction filter (using claim 1 as an example).
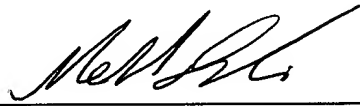
CONCLUSION

In view of the claim amendments and the remarks, withdrawal of the rejections and allowance of claims is requested.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

Respectfully submitted,
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